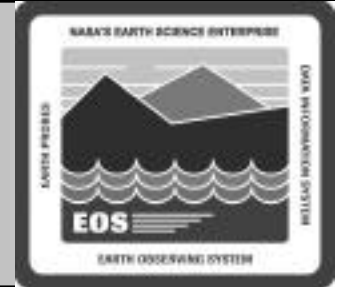


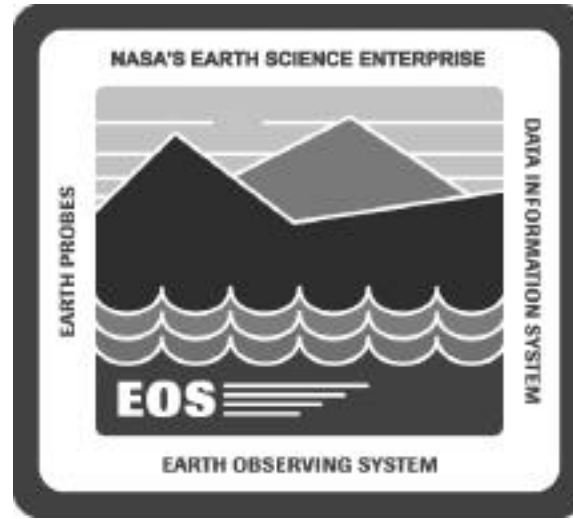
ECS SDPS Delta Release Readiness Review for EDC, GSFC, and LaRC

9 June 1999



The ECS SDPS Release Readiness Review (RRR) has been planned, managed, and conducted by Farzad Davarya.

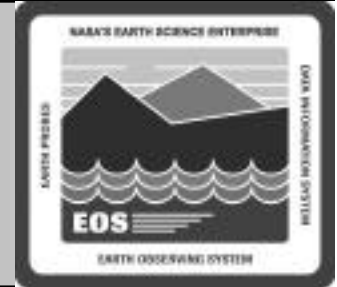
Please forward questions and comments to fdavarya@eos.hitc.com



Introduction & Agenda

Ron Klotz

Introduction



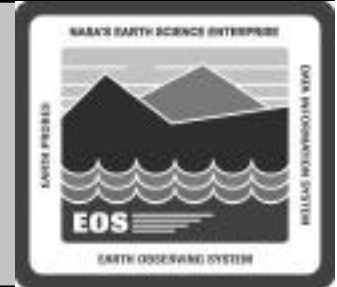
Purpose

- To provide a final summary review of the science system release 4 status to support the AM-1 launch and early operations at EDC, GSFC, and LaRC.

Objective

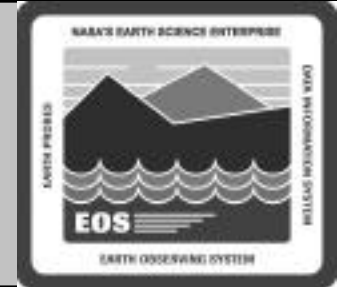
- To establish a basis which supports our assessment that the science system release 4 baseline, including workoff plans, is acceptable to support the Landsat-7 and AM-1 missions.

Agenda



- | | | |
|---|--------------|---------|
| • Introduction and Agenda | Ron Klotz | 1:00 PM |
| • Delivered System Functionality & Verification Results | Steve Fox | 1:10 PM |
| • End-to-End & Performance Verification | Bob Plante | 2:10 PM |
| • Break | | 2:45 PM |
| • NCR Summary & Liens Against the System | Randy Miller | 3:00 PM |

Agenda (Cont.)



- **Physical Configuration Audit**
- **Functional Configuration Audit**
- **CDRL Documentation Summary**
- **ECS Support of Site Readiness**
- **Concluding Remarks**

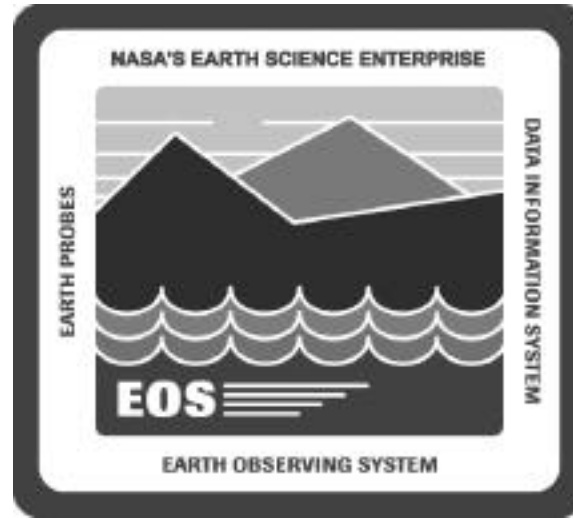
Rich Gorsky 3:45 PM

Joe Spyrison 4:05 PM

Steve Marley 4:25 PM

Ken Prickett 4:35 PM

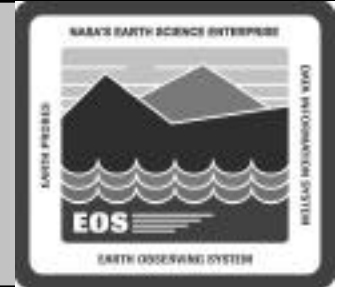
Ron Klotz 5:00 PM



Delivered System Functionality & Verification Results

Steve Fox

Briefing Overview



Delivered System Functions

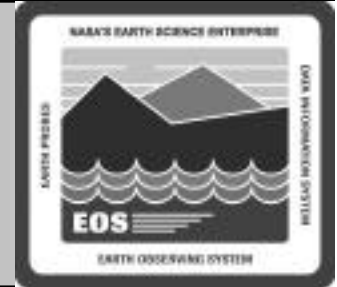
Summary by DAAC / Instrument

Summary of Key Liens

Verification Approach

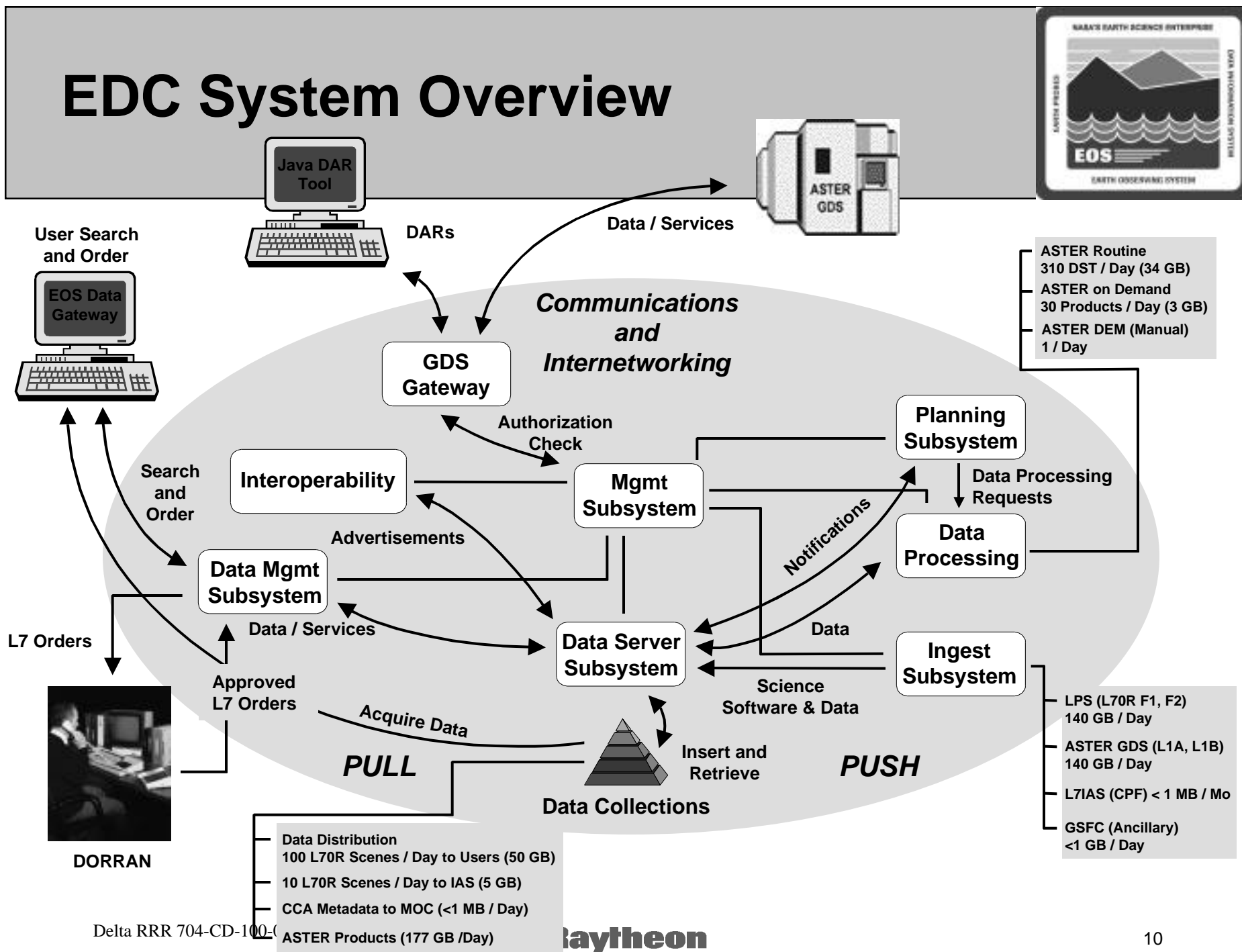
Verification Results

System Capabilities



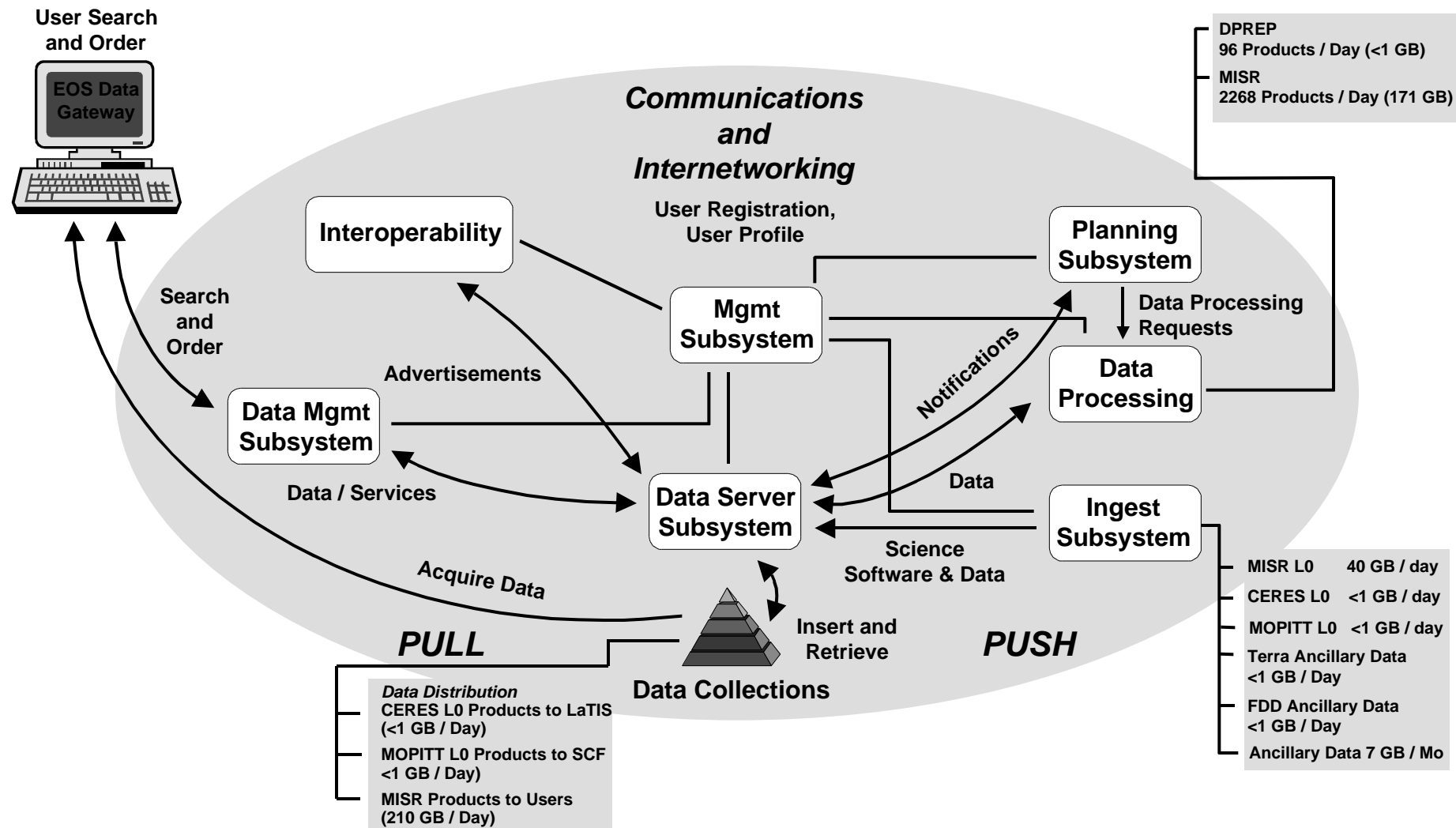
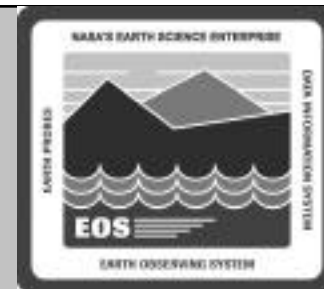
- External interfaces (EDOS, Landsat 7, DAO, ancillary data)
- Archive and retrieval of Terra and Landsat 7 products
- Terra science software integration and test
- Automated processing of MODIS L1, ASTER and MISR standard products
- Expedited data service
- Operator-assisted science QA
- User interface (EOS Data Gateway) for search, browse, and data order (limited metadata search) and DAR submission
- Media (8mm tape) and electronic data distribution
- Landsat 7 fixed scene subsetting
- Operator-assisted ASTER on-demand processing
- Operator-assisted subscriptions

EDC System Overview

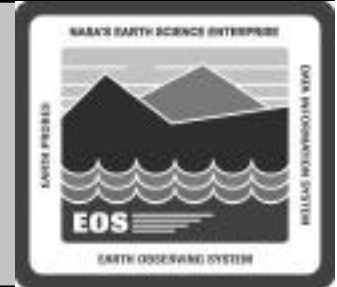




LaRC System Overview



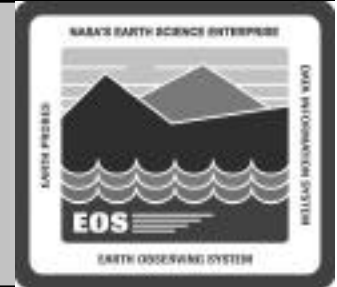
EDC Key Lien Summary (1 of 2) (from IRRR)



Landsat 7

- **Can't search on key L7 PSA's - fixed**
- **Orders lost when SDSRV restarted - fixed**
- **Ingest and distribution at ~80% of requirements**
 - **Move subsetting servers to SGI - completed**
 - **Upgrade ingest network to HiPPI - completed**
 - **Optimize metadata preprocessing - completed**
 - **Eliminate Staging Disk Full problem - fixed in 4PY.04**
- **Many system operations details remain undocumented**
 - **Will supplement EDC ops staff with Landover staff through L7 OIVP - ongoing**
 - **Documentation of operational workarounds - ongoing, initial version delivered**

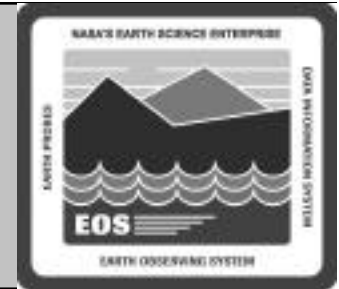
EDC Key Lien Summary (2 of 2) (from IRRR)



ASTER

- **Poor ASTER D3 Ingest Performance**
 - Optimize metadata preprocessing - completed
 - Improve Sun - SGI FDDI performance - completed
- **STMGT database deadlocks during ASTER processing - fixed**
- **Many system operations details remain undocumented**
 - Documentation of operational workarounds - ongoing, initial version delivered

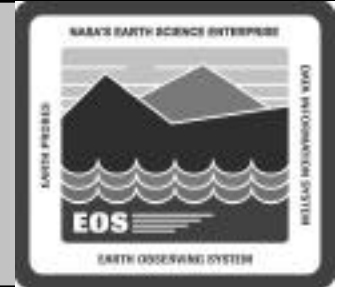
Summary of EDC Results



	FC	EC	PC
L7 Ingest			
L7 Data Distribution			
ASTER Ingest			
ASTER Production			
ASTER Data Distribution			
System Stability			
System Operability			

	Meets or exceeds mission goals
	Meets near-term mission goals (with liens)
	Liens must be worked to meet near-term goals

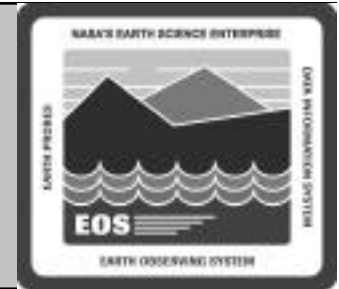
GSFC Key Lien Summary (from IRRR)



MODIS

- **Bad shared library pathnames flooded network with automount requests - fixed during ETE**
- **Eliminate Staging Disk Full problem - fixed in 4PY.04**
- **AMASS throughput slowed destaging from processing disk - AMASS tuning completed**
- **Many system operations details remain undocumented**
 - **Documentation of operational workarounds - ongoing, initial version delivered**

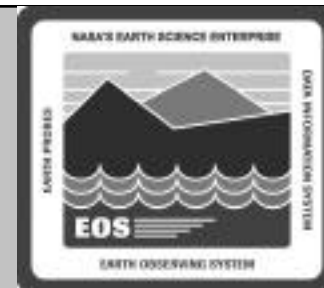
Summary of GSFC Results



	FC	EC	PC
MODIS Ingest			
Ancillary Data Ingest			
ASTER Expedited Ingest			
MODIS Production			
MODIS Data Distribution			
System Stability			
System Operability			

	Meets or exceeds mission goals
	Meets near-term mission goals (with liens)
	Liens must be worked to meet near-term goals

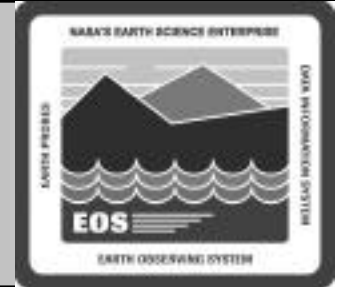
Summary of LaRC Results



	FC	EC	ETE
MISR/CERES/MOPITT Ingest			
Ancillary Data Ingest			
Expedited Data Ingest			
MISR Production			
MISR Data Distribution			
System Stability			
System Operability			

	Meets or exceeds mission goals
	Meets near-term mission goals (with liens)
	Liens must be worked to meet near-term goals

Key Lien Summary



Landsat 7

- Poor search performance - to be fixed in July patch
- Ingest server stability

ASTER

- D3 ingest stability - to be fixed in July patch

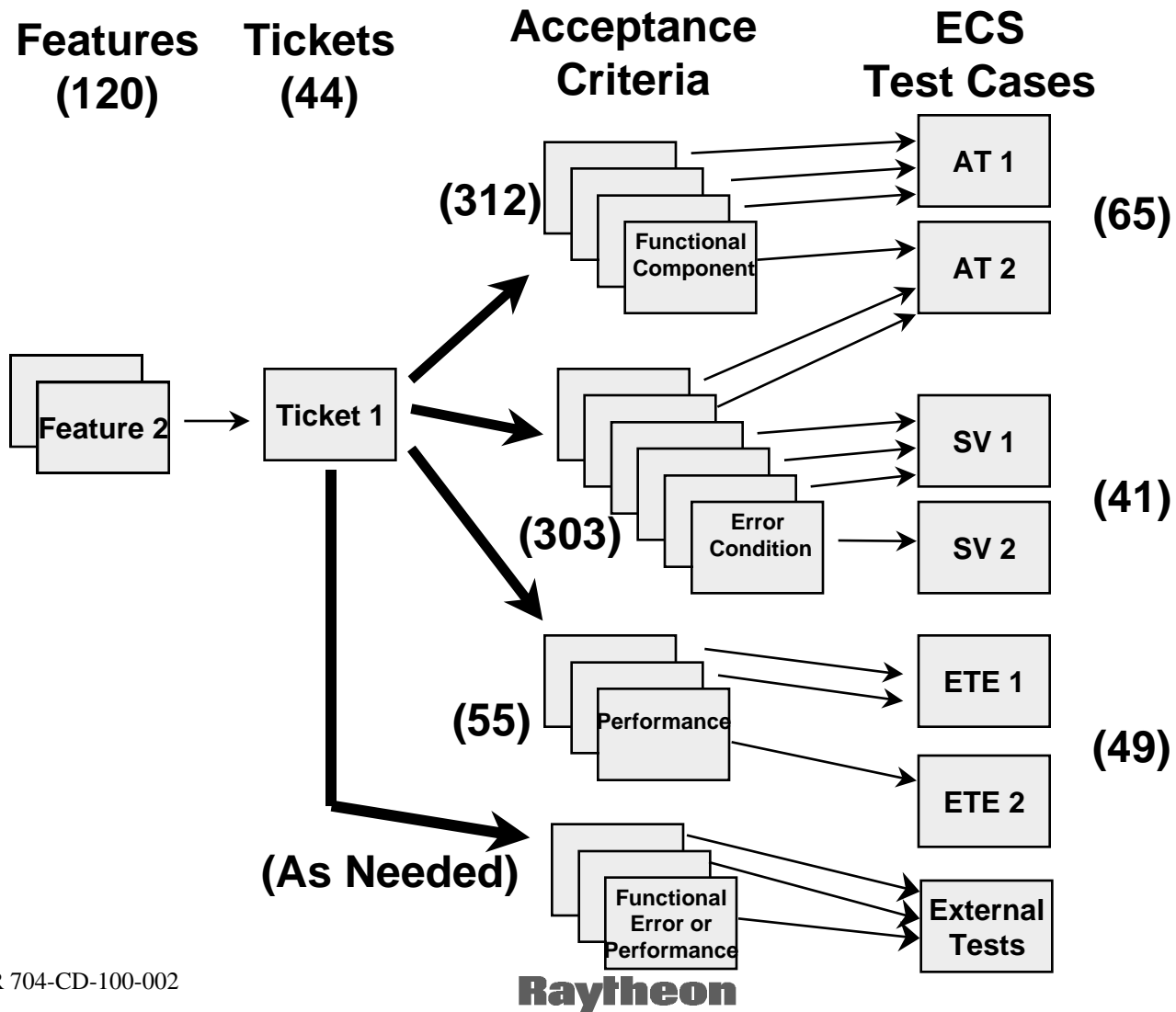
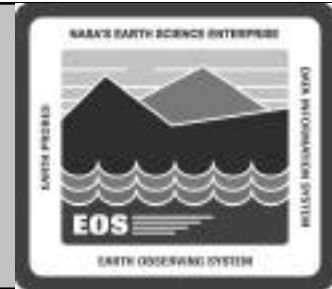
MODIS

- Data corruption problems - isolated to SGI SCSI controller, SGI to perform formal failure analysis

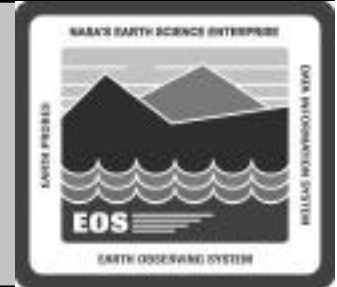
General Stability

- AMASS database errors / corruption / data loss - working with vendor for a patch
- 8mm server error recovery - fixed by Terra L+90
- Storage management servers crash under heavy acquire load - to be fixed in July patch
- Client core dumps when server is restarted - working with SGI for a patch
- Occasional Data Distribution warm start failures - results in cold start

Verification Approach



Verification Approach



Acceptance criteria “tickets” were defined for each Feature Group (i.e. group of related features)

- Criteria covered functional components, error conditions, and performance
- Criteria were approved by ESDIS
- Test procedures were developed and assessed for completeness and coverage by ECS system engineering and then approved by ESDIS

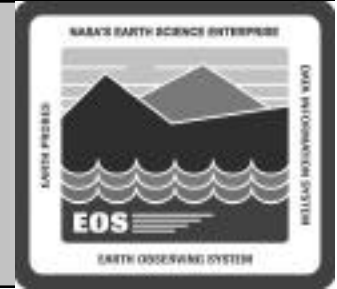
Test procedures were dry run in VATC and/or at sites before formal execution

Formally executed test procedures at sites/VATC in the presence of authorized witnesses

Test status maintained by ESDIS in a Verification Database (VDB)

Additional verification performed using ECS End-to-End Tests, EGS Tests, and Landsat 7 Project Tests

Verification Status Definitions



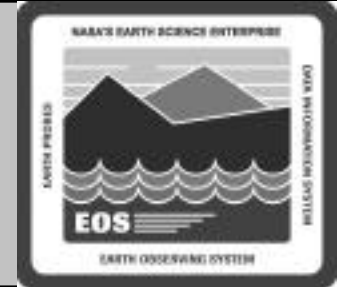
Feature Group (FG) - a set of related features

FC, EC, PC -- Functional Component, Error Condition, Performance Criterion

Verification Status

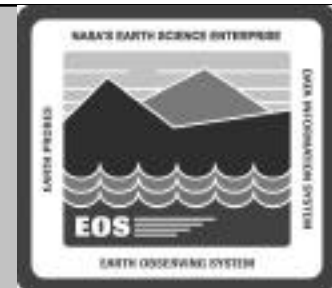
- **V = Verified by ECS or ESDIS Test Program (no severity 1 or 2 NCR against criterion)**
- **W = Working -- demonstrated to ESDIS; not completely verified by ECS/ESDIS Test Program**
- **NV = Not Verified**
- **NT = Not Tested**
- **NA = Not Applicable -- no FG criteria to test for this FC, EC, or PC area**
- **VN = Verified Near-term (performance only)**
- **I = Inadequate (performance only)**

Feature Group Summary by Area



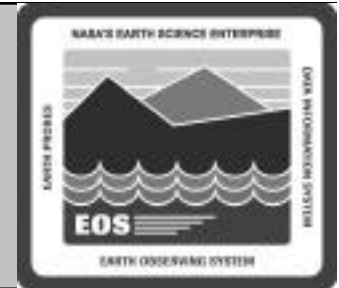
Functional Category	# of FGs Applicable to FC Tests	# FGs Status Working (FC)	% Working (FC)	# of FGs Applicable to EC Tests	# FGs Status Working (EC)	% Working (EC)	# of FGs Applicable to PC Tests	# FGs Status Working (PC)	% Working (PC)
Ingest	10	9	90	10	9	90	6	5	83
Archive	5	5	100	4	4	100	2	2	100
Production	8	8	100	4	4	100	1	1	100
Search and Order	6	4	66	5	4	80	1	1	100
Distribution	9	9	100	9	9	100	3	3	100
Management	9	8	88	5	5	100	2	1	50
TOTAL	47	43	91	37	35	95	15	13	87

Feature Group Status (1 of 7)



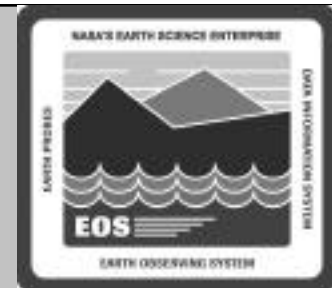
Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
hgst	FDDInterface	V	V	V	
hgst	EMOSInterface	NT	NT	NA	ECSTest to verify by 6/15/99
hgst	Concurrent Ingest	W	V	VN	18 of 20 criteria verified. One failure to produce a status message when DHF is down to be tested in MOSS-2: ASTER ingest stability not adequate (NCR 17707 - to be fixed in July patch)
hgst	Data Versioning	V	V	NA	
hgst	Landsat LPS Interface	V	W	V	41 of 46 criteria verified. All FCs verified. All PCs verified. Five error conditions related to LPS DAN & DAA handling to be tested in MOSS-2.
hgst	Landsat ASInterface	V	V	V	
hgst	EDOSInterface	V	V	VN	26 of 28 criteria verified. All FCs verified. All ECs verified. Expedited data ingest PC not verified at GSFC and LaRC. To be tested in MOSS-2.
hgst	ASTER D3Interface	V	W	I	18 of 21 criteria verified. All FCs verified. One low risk EC not verified (invalid originating system parameter). Ingest stability impacts D3 throughput (to be fixed in July)
hgst	NOAA Ancillary Data Interfaces	V	V	NA	
hgst	GDAAC Ancillary Data Interfaces	V	W	NA	42 of 43 criteria verified. All FCs verified. One low risk EC not verified (invalid originating system parameter)

Feature Group Status (2 of 7)



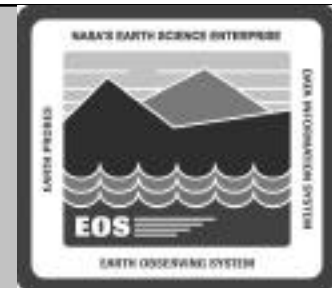
Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
Archive	Ingest Data Cataloging and Archive	V	V	NA	
Archive	Subscription Handling	V	V	VN	Subscription performance verified at LaRC; to be verified at GSFC and EDC during MOSS-2
Archive	New Data Type Installations	V	V	NA	
Archive	Update QA Metadata	V	V	V	
Archive	Handle archive tape failures	W	NA	NA	2 of 3 criteria verified. Access to backup copy of data in archive will be tested at LaRC during MOSS-2.

Feature Group Status (3 of 7)



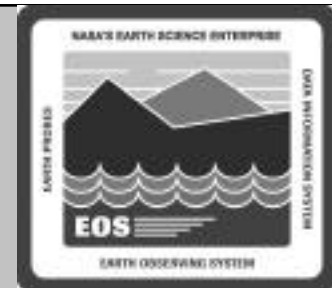
Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
Production	FDD Attitude Preprocessing	V	NA	NA	
Production	SDP Toolkit Availability	V	NA	NA	In routine use, not tested in Drop 4P
Production	Failed PGE Executions	W	NA	NA	8 of 9 criteria verified. Check for PGEs that exceed disk space allocations not tested. Low risk since this is checked during SSI&T.
Production	AM-1 Ancillary Data Preprocessing	V	W	NA	12 of 15 criteria verified. DPREP boundary conditions will be tested at GSFC during MOSS-2.
Production	Detect Runaway PGEs	V	V	NA	
Production	Resource Reservations	V	V	NA	
Production	PGE Execution	W	V	VN	37 of 44 criteria verified. Nominal production working, special case production rules will be verified using -at launch- PGEs, e.g., Optional hputs, Alternate hputs, and Spatial Query; Performance verified at LaRC, to be verified at GSFC and EDC as part
Production	SSI&T	V	NA	NA	In routine use, not tested in Drop 4

Feature Group Status (4 of 7)



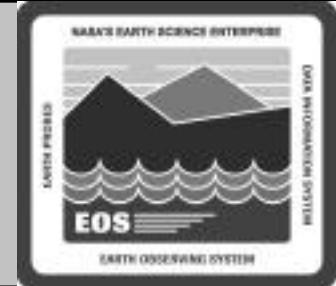
Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
Search and Order	Search and Order	V	NV	NA	7 of 8 criteria verified. All ECs Verified except for error handling related to bad Order tracking GUI input (NCR 20131 - low impact).
Search and Order	Manage Data Dictionary	V	V	NA	
Search and Order	User Registration	V	V	NA	
Search and Order	V0 Interoperability in the V0 Web Gateway	W	W	VN	20 of 22 criteria verified. All FCs Verified except using Landsat 7 PSAs as search criteria (to be tested in L+4h); in ECs have not tested SDSRV failures during request; Performance of L-7 search is slow
Search and Order	ASTER DAR Support	NV	NA	NA	3 of 7 criteria verified. High/Medium impact JD NCRs to be patched at L-5 weeks and L+8 weeks.
Search and Order	Advertisements	NV	V	NA	6 of 7 criteria verified. Work-off of Advertisements NCRs are low impact since advertising service will not be accessible to users.

Feature Group Status (5 of 7)



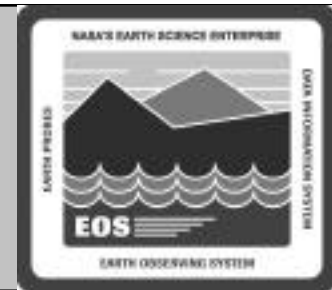
Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
Distribution	Data Distribution and Display	W	V	NA	7 of 8 criteria verified. Access to production history will be tested in MOSS-2.
Distribution	Scheduling and management of media data	W	V	NA	8 of 9 criteria verified. Additional device management scenario will be tested in EGS-10.
Distribution	Distribution Management	W	V	NA	12 of 13 criteria verified. Deleting expired files from ftp pull area via GUI will be tested in EGS-10.
Distribution	Distribution garbage collection	V	W	NA	4 of 5 criteria verified. Need to formally verify successful recovery of Pull Area after Ftp Pull Monitor failure. Will be verified in EGS-10.
Distribution	Landsat MOC Interface	V	V	V	
Distribution	ASTER Expedited & E-mail interfaces	V	V	VN	30 of 33 criteria verified. All FC verified. All PC verified. Performance verification pending results of MOSS-2 at GSFC.
Distribution	Landsat Distribution	V	V	VN	12 of 14 criteria verified. All FCs verified. All ECs verified. Full performance to be verified in T4 and L-7 OPS.
Distribution	Landsat Billing Interface	V	V	NA	
Distribution	SOFT interface	V	V	NA	

Feature Group Status (7 of 7)

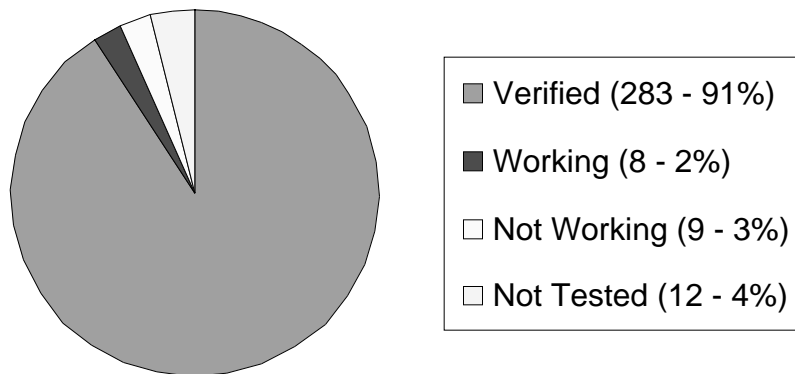


Functional Category	Feature Group Title	FC Status	EC Status	PC Status	Status Comments
Management	Metadata Works	V	NA	NA	In routine use, not tested in Drop 4
Management	System Backup and Restore	V	V	V	
Management	System Management and Monitoring	V	V	NV	9 of 10 criteria verified. All FCs verified. All ECs verified. Timely monitoring not verified. Workaround for launch is ECS Assist for timely monitoring.
Management	Trouble Ticketing	W	V	NA	12 of 15 criteria verified. Trouble Ticket exchange with ASTER GDS, EBnet, and NSI will be tested in EGS-10.
Management	Failure Recovery	W	NA	NA	19 of 20 criteria verified. All FCs verified except for SDSRV failure recovery during database back-up (NCR 20502 - low impact).
Management	DCE Management	V	V	NA	
Management	Baseline and Inventory Management	V	V	NA	
Management	System Installation	V	NA	NA	In routine use, not tested in Drop 4PX
Management	Monitor Security	NV	NA	NA	2 of 3 criteria verified. Logging unsuccessful DCE logins to syslog will be tested in EGS-10.

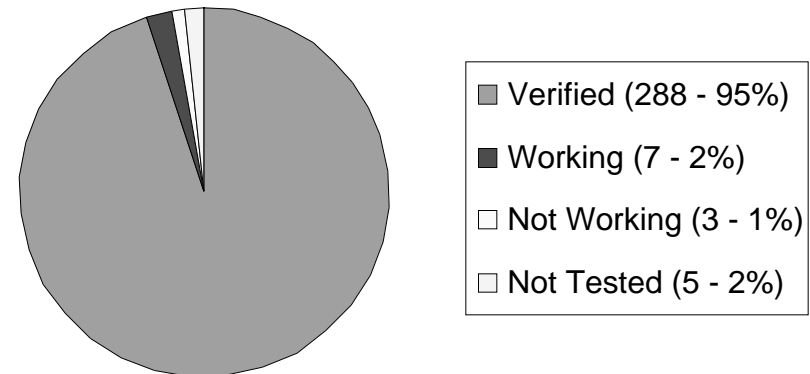
Criteria Status Summary



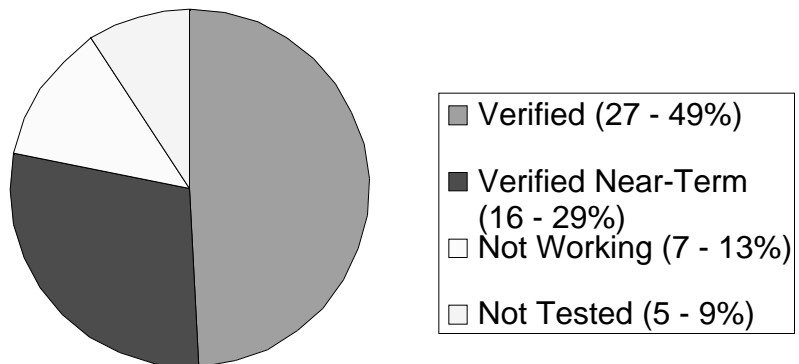
FC Criteria Summary



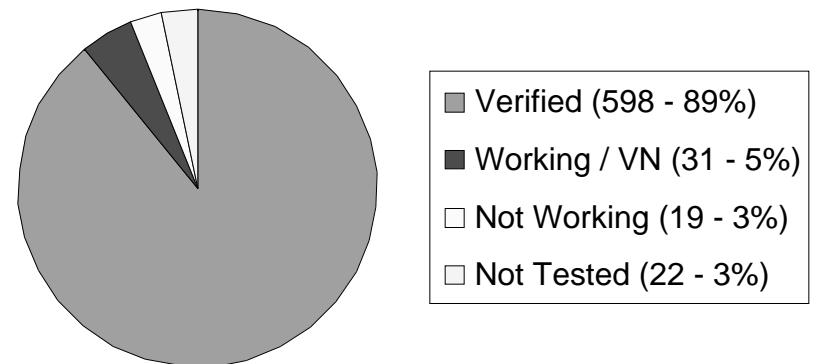
EC Criteria Summary

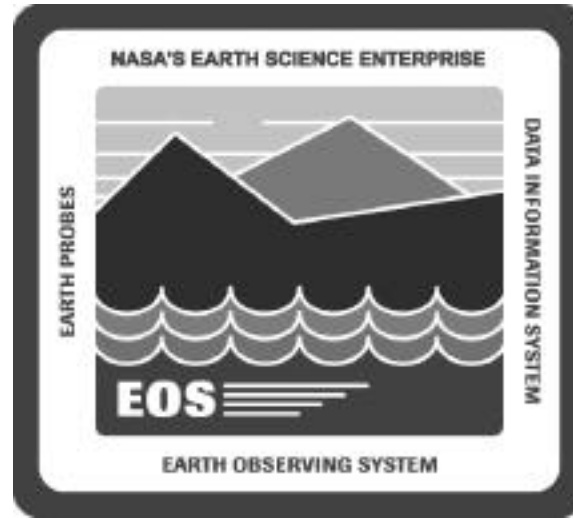


PC Criteria Summary



All Criteria Summary

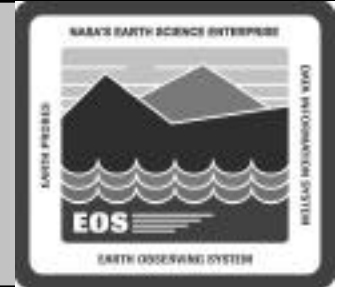




End-to-End & Performance Verification

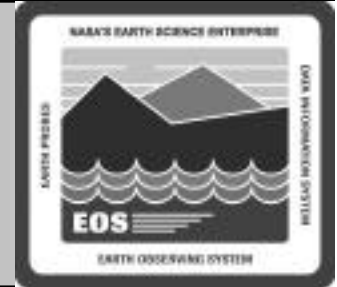
Bob Plante

Briefing Overview



- **Objective**
- **Scope**
- **Test Conduct**
- **LaRC Test Results**
- **ETE Summary**

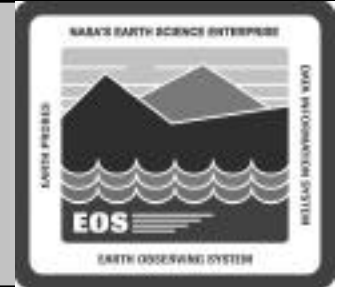
Objective



Objective: Show ability to achieve 24 hours of operation in at most 24 hours

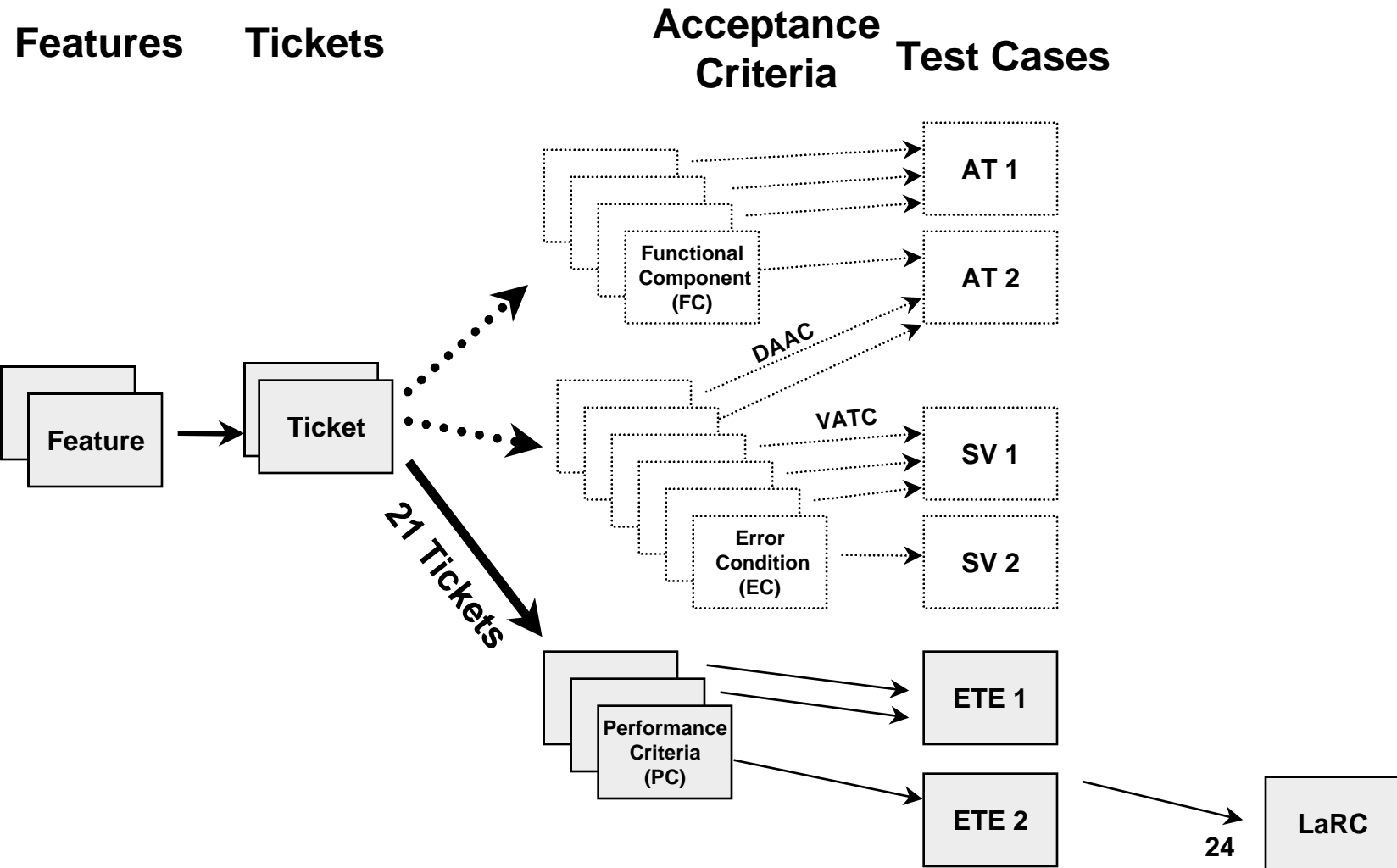
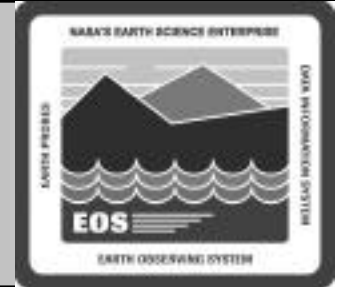
- **Normal production scenarios verify ECS can sustain processing of science data that would normally be received from all external entities within a 24-hour period**
- **Verify performance criteria specified in the Feature Tickets while running End-to-End Scenarios**
- **Use operational hardware and software to verify End-to-End Criteria**
- **Perform MISR ingest, production and distribution**

ETE Test Conduct

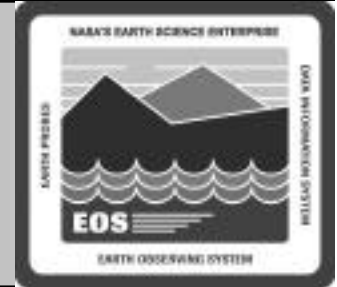


- **Testing was documented using established procedures**
 - All procedures were approved by ESDIS prior to formal testing
- **Tests were witnessed by ESDIS representatives and IVV**
- **“Synthetic” MISR PGEs were used due to late delivery of MISR version 2.1.1**
 - synthetic PGEs were designed to perform equivalent to the current MISR PGEs
- **First formal ETE Testing at LaRC occurred on April 13-14, 1999; ETE rerun occurred June 2-3, 1999**

Ticket Mapping Schema

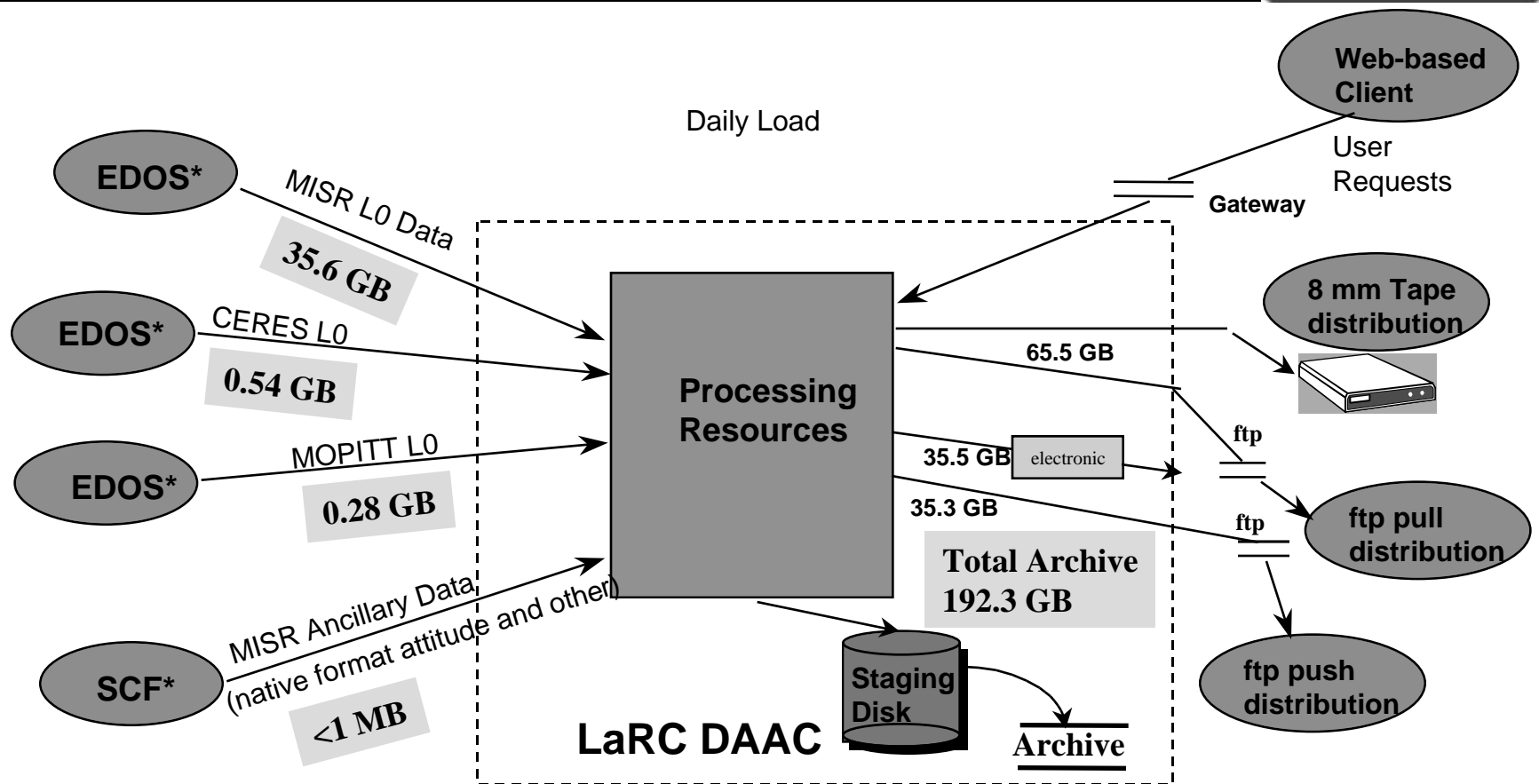
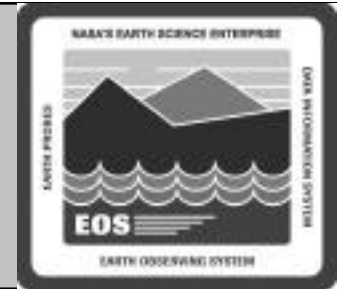


TEST Criteria for LaRC



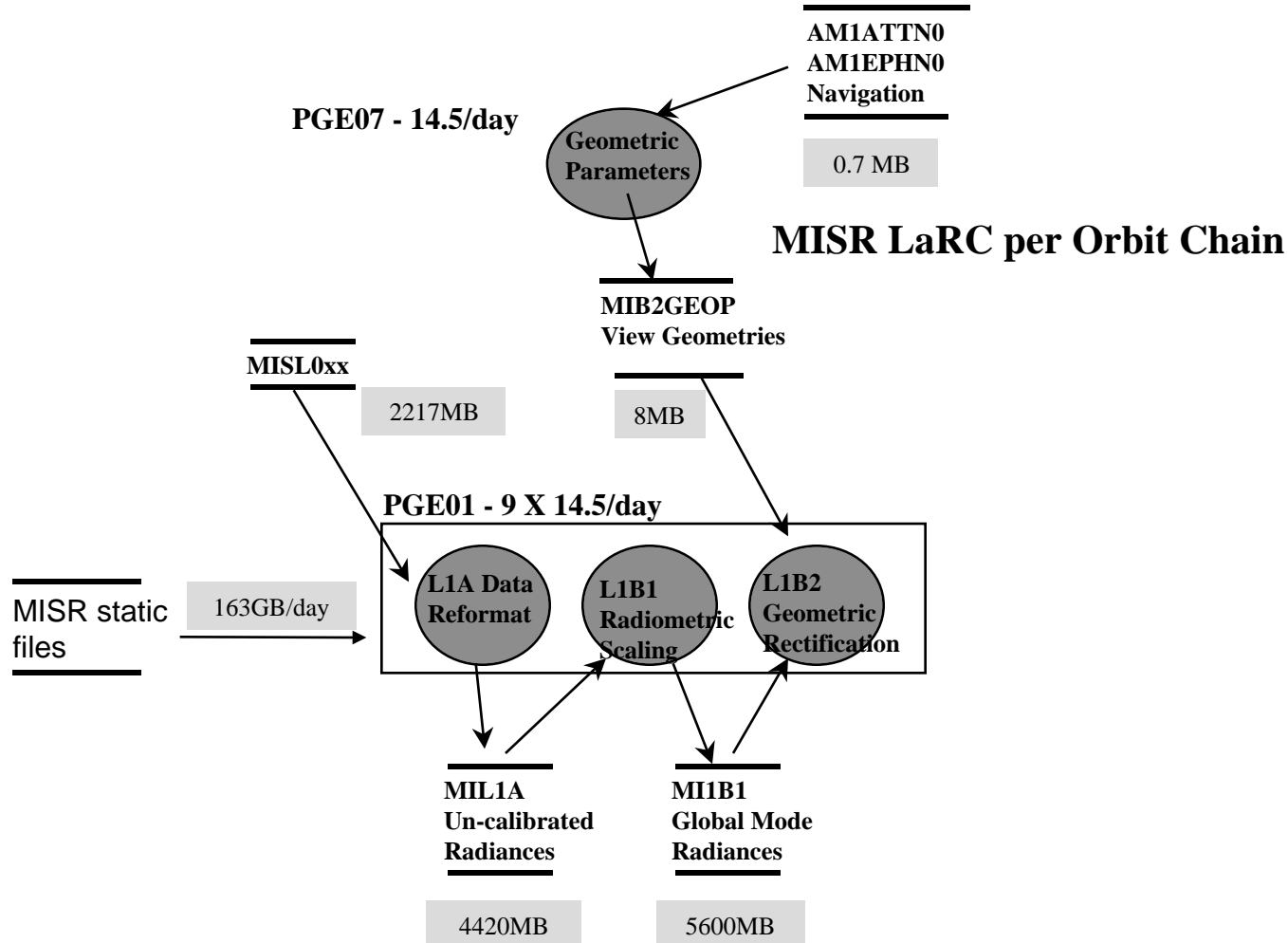
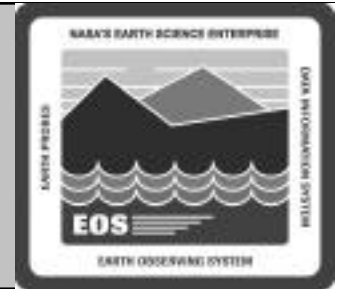
- **Ingest 24 hrs of EDOS data**
 - L0 MISR
 - L0 MOPITT/CERES
 - AM-1 Ancillary
- **Production of MISR L1**
 - 12 Orbits of DPREP (24 executions)
 - 15 Orbits of MISR PGE 07 (15 executions)
 - 15 Orbits of MISR PGE 01 (135 executions)
- **Full Distribution of Electronic (FTP Push/Pull) and Media**
- **Perform concurrent SSI&T**
 - DAAC conducted concurrent SSI&T on MISR PGEs during ETE preparation
- **Execute Fault and Recovery procedures**

LaRC End to End Scenario Context Diagram

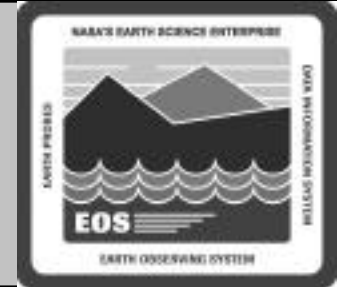


* Simulated interface

LaRC End-To-End Production Scenario

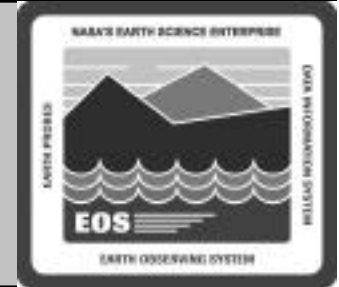


General Performance Overview for LaRC, 13-14 April 1999, Initial



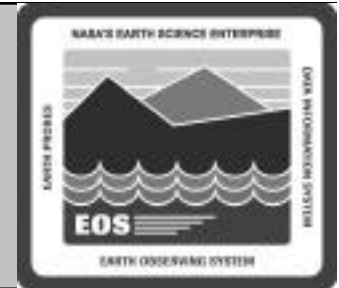
Function	Goal 24 HRS	Actual 24 HRS	Goal (GB) 24 HRS	Actual (GB) 24 HRS
Ingest				
MISR L0	135 granules	144 granules	33.3 GB	35.6 GB 107%
CERES L0	6 granules	6 granules	0.54 GB	0.54 GB 100%
MOPITT L0	3 granules	3 granules	0.28 GB	0.28 GB 100%
AM1ANC	14 granules	14 granules	0.0066 GB	0.0066GB 100%
Production (PGEs)				
DPREP	14 executions	8 executions 57.1%	N/A	N/A
MISR07	14 executions	15 executions 107%	N/A	N/A
MISR01	135 executions	69 executions 51.1%	N/A	N/A
Distribution				
Searches on 95K Inventory	1060 searches	1204 searches 114%		
ftp pull	7 orders	11 orders	35.5 GB	55.3 GB 156%
8 mm distribution	13 orders	9 orders	65.5 GB	54.6 GB 83%
ftp push (Subscription)	72 orders	62 orders	35.3 GB	30.4 GB 86%

General Performance Overview for LaRC, 2-3 June 1999, Rerun



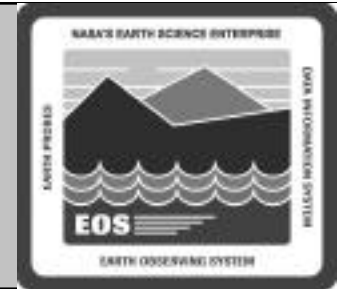
Function	Goal 24 HRS	Actual 24 HRS	Goal (GB) 24 HRS	Actual (GB) 24 HRS
Ingest				
MISR L0	135 granules	144 granules	33.3 GB	35.6 GB 107%
CERES L0	6 granules	6 granules	0.54 GB	0.54 GB 100%
MOPITT L0	3 granules	3 granules	0.28 GB	0.28 GB 100%
AM1ANC	14 granules	17 granules	0.0066 GB	0.0080GB 121%
Production (PGEs)				
DPREP	26 executions	25 executions 96%	N/A	N/A
MISR07	15 executions	15 executions 100%	N/A	N/A
MISR01	135 executions	133 executions 98.5%	N/A	N/A
Distribution				
Searches on 95K Inventory	1080 searches	1804 searches 167%	N/A	N/A
ftp pull	6 orders	9 orders	33 GB	45 GB 136%
8 mm distribution	12 orders	15 orders	68 GB	48.5 GB 71.3%
ftp push (Subscription)	72 orders	130 orders	41 GB	72.7 GB 177%
Total volume produced			158.2 GB	342.7 GB 217%

LaRC Test Results, 13-14 April 1999, Initial



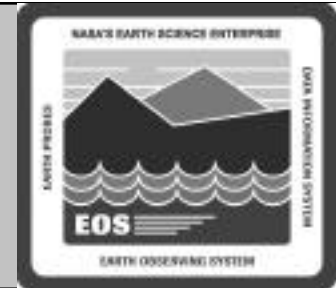
Test Title	Ticket Title	Functionality	Performance
LaRC E2E Tests			
Pre-Test			
B140100-210 Load SDSRV 95K Inventory			
B140100-211 Load STMGT with 10K Files			
B140200-220 Environment Setup			
B140200-230 Subscriptions on MISR Products			
B140200-240 EDOS Pre-Test Ingest (MODIS, AVH-1 ANC)			
B140200-247 Pre-Stage 8 hrs of MISR L0 Data			
B140100-250 User Registration			
B140100-260 8mm Tape Stacker Setup			
24 Hour Test			
B140100-410 Performance Monitor Startup/Shutdown			
B140100-420 Startup via HPOV and Cold Start		HPOpenView performance	HPOpenView performance
B140200-440 EDOS Ingest (MISR, CERES, MOPITT, AVH-1 ANC)			
B140200-455 Ancillary Data Ingest			
B140300-460 MISR Production			Only 60% of Requirement
B140300-470 MISR Search and Order			
B140100-478 Search Against 95K Inventory			
B140100-485 8mm Tape Order Assembly			
B140300-495 Plan Next Days Production			
meets early needs of mission			
supports early needs of mission but requires additional resources to support			
does not support			

LaRC Test Results, 13-14 April 1999, Initial (Cont.)



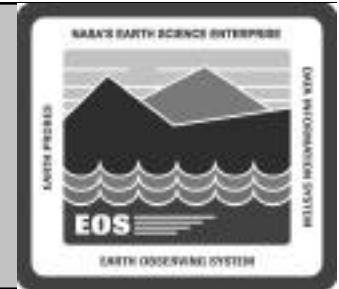
Test Title	Ticket Title	Functionality	Performance
B140300-510 SSI&T			
B140100-520 Failure Recovery			
Post-Test			
B140100-610 Shutdown via HPOV		HPOpenView performance	HPOpenView performance
B140300-620 Post Test Verification			
meets early needs of mission			
supports early needs of mission but requires additional resources to support			
does not support			

LaRC Test Results, 2-3 June 1999, Rerun



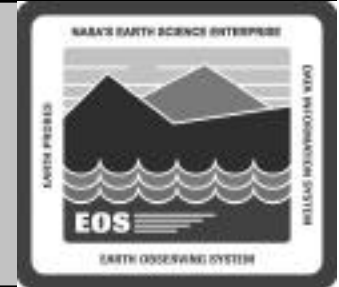
Test Title	Ticket Title	Functionality	Performance
LaRC E2E Tests			
Pre-Test			
B140100-210 Load SDSRV 95K Inventory			
B140100-211 Load STMGT with 10K Files			
B140200-220 Environment Setup			
B140200-230 Subscriptions on MISR Products			
B140200-240 EDOS Pre-Test Ingest (MODIS, AM-1 ANC)			
B140200-247 Pre-Stage 8 hrs of MISR LO Data			
B140100-250 User Registration			
B140100-260 8mm Tape Stacker Setup			
24 Hour Test			
B140100-410 Performance Monitor Startup/Shutdown			
B140100-420 Startup via HPOV and Cold Start		HPOpenView performance	HPOpenView performance
B140200-440 EDOS Ingest (MISR, CERES, MORITT, AM-1 ANC)			
B140200-455 Ancillary Data Ingest			
B140300-460 MISR Production			
B140300-470 MISR Search and Order			
B140100-478 Search Against 95K Inventory			
B140100-485 8mm Tape Order Assembly			STMGT set up problems
B140300-495 Plan Next Days Production			
meets early needs of mission			
supports early needs of mission but requires additional resources to support			
does not support			

LaRC Test Results, 2-3 June 1999, Rerun (Cont.)



Test Title	Ticket Title	Functionality	Performance
B140300-510 SSI&T			
B140100-520 Failure Recovery		AMASS/STMGT loss of data	AMASS/STMGT loss of data
Post-Test			
B140100-610 Shutdown via HPOV		HPOpenView performance	HPOpenView performance
B140300-620 Post Test Verification			
meets early needs of mission			
supports early needs of mission but requires additional resources to support			
does not support			

Assessment By Area - LaRC



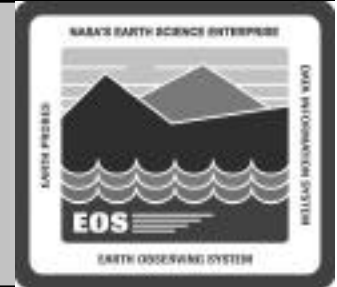
Functionality:

- **All required functionality was successfully verified. Additionally, 27 functional criteria were successfully demonstrated during the ETE process.**

Performance:

- **ECS and LaRC personnel completed a major reconfiguration and operating system upgrade between the formal ETE and the June rerun. Major performance enhancements were also introduced for the PDPS subsystem. Overall system performance improvement was significant.**

Assessment By Area - LaRC (cont).



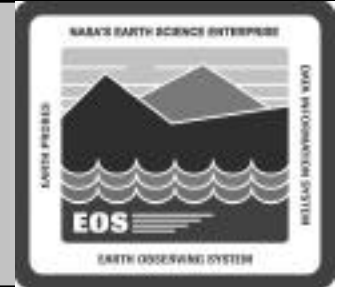
Stability:

- System stability was up considerably from earlier tests. Resource contention and management problems experienced in the earlier testing were significantly reduced. Ingest was particularly stable. However, STMGT and AMASS stability issues remain a major concern and are currently being worked.

Operability:

- Operability remains a key concern, but the FAQs that were recently developed cover the majority of the developer system monitoring “tricks of the trade”. FAQs were reviewed as part of the ETE process at LaRC.

Summary



- All key functions except for HPOpenView were demonstrated during the ETE
 - 27 “functional components” were also successfully verified
- Performance for MISR planning and processing showed significant improvement
 - “deadlocks” and overall resource contention were significantly reduced
- ECS is committed to work off AMASS and Storage Management stability issues
- ECS remains committed to the transfer of system operations and troubleshooting knowledge to the DAACs